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U S NAVY RESPONSE TO RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT FOLLOW UP COMMENTS ON HUMAN HEALTH RISK EVALUATION FOR CONSTRUCTION EQUIPMENT DEPARTMENT THE FORMER NCBC DAVISVILLE RI
03/15/2013
TETRA TECH

Navy Response to Rhode Island Department of Environmental Management Follow-up Comments on Human Health Risk Evaluation for Construction Equipment Department Report Dated November 2012, OU7 at The Former Naval Construction Battalion Center (NCBC) Davisville Davisville, Rhode Island (RIDEM Correspondence Dated March 15, 2013)

RIDEM Comment No. 1: Page ES-2, Bullet 2: "Arsenic would also be considered a risk driver if evaluated as a COPC. However, arsenic concentrations in surface soil are within the range of literature background concentrations and within the range of NCBC Davisville background values. Additionally, arsenic concentrations in surface soil are less than the RIDEM direct exposure criterion, which is based on the 95 percent UCL of state-wide natural background data. Consequently, arsenic was not selected as a COPC."

If concentrations of arsenic are all below the RIDEM direct exposure criterion, arsenic may be eliminated from the list of site specific COPCs. Please be advised, however, that while background values from literature are useful pieces of information, the Remediation Regulations require that a site-specific investigation (using a statistical method which is appropriate for the distribution of contaminants) be conducted to evaluate available data for the purposes of defining background concentrations. Please delete the first two sentences and references to literature background studies to define background concentrations in the above section and in any other section of this report.

Navy Response to Comment No. 1: *All concentrations of arsenic are less than the RIDEM direct exposure criterion; therefore, arsenic was eliminated from COPC selection. Because an approved site-specific background soil database is not available for metals in the NCBC Davisville CED area, it is recommended that discussions of the literature background values remain in the report for informational purposes. The limited background values available for NCBC Davisville (the base-wide background dataset) will also be further discussed. The text in question from Bullet 2 on Page ES-2 will be revised as follows:*

"Arsenic concentrations in surface soil are less than the RIDEM direct exposure criterion, which is based on the 95 percent UCL of state-wide natural background data. Because arsenic concentrations were less than the RIDEM direct exposure criterion, arsenic was not selected as a COPC."

The footnotes discussing arsenic for the tables included within the text of Sections 4.1.2, 4.3, and 4.5 will be revised to indicate that because arsenic concentrations were less than the RIDEM direct exposure criterion, arsenic was not selected as a COPC/COC.

RIDEM Follow-up Comment on Navy Response No. 1 – Response is acceptable.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 1: *No further response is required.*

RIDEM Comment No. 2: Page ES-3, Bullet 1 and Appendix C: "No site specific background data were available for manganese and aluminum. However, a comparison of site data to literature background values indicated that all detected manganese and aluminum concentrations were within range of naturally occurring background levels."

Please be advised that the Remediation Regulations require that a site-specific background investigation be conducted to evaluate available data for the purpose of defining background concentrations. Please revise the HHRE in this section and any other section of this report so that all references to use of literature studies to determine background concentrations are eliminated and carry manganese and aluminum further in the COC process.

Navy Response to Comment No. 2: *A site-specific background data set is not available for the CED area, and, as noted in the response to Comment No. 1, an approved background data set is not available for NCBC Davisville. Therefore, literature background values are included in the text for informational purposes. However, manganese and aluminum were eliminated from further consideration as chemicals of concern for direct contact risk primarily because of the uncertainty associated with the fact that a sub-chronic reference concentration is not available for manganese. This results in the use of a chronic reference concentration when evaluating the construction worker scenario and, thus, a likely over estimation of risk for that receptor. The justification for the elimination of manganese and aluminum from further consideration is presented in the second bullet on Page ES-3. The following will be added as the last sentence in Bullet 1 on Page ES-3: "Manganese and aluminum were eliminated from further consideration and were not retained as COCs based on the rationale provided in the next bullet."*

RIDEM Follow-up Comment on Navy Response No. 2 – Although there is uncertainty associated with using a chronic RfC in lieu of a subchronic RfC, Navy should err on the side of conservatism and use the chronic RfCs provided in the November 2012 Regional Screening Level (RSL) table. Instead of eliminating constituents as COPCs due to lack of subchronic RfCs, the additional risk generated by using conservative chronic RfCs could be discussed in the uncertainty section. Use of chronic toxicity values to evaluate subchronic exposures is a practice commonly employed in risk assessment and recommended by EPA in their 1989 guidance document, "Risk Assessment Guidance for Superfund (RAGS), Part A" (e.g., see page 7-9 of RAGS-A: "On the other hand, if subchronic data are missing and a chronic oral RfD derived from chronic data exists, the chronic oral RfD is adopted as the subchronic oral RfD. There is no application of an uncertainty factor to account for differences in exposure duration in this instance." This particular quote is related to reference doses (RfDs), but the same concept may be applied to the RfC.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 2: *Manganese was not eliminated as a chemical of potential concern (COPC). In performing the quantitative risk assessment, the Navy did indeed use risk-based concentrations calculated for the construction worker using the chronic reference concentrations provided in the EPA Regional Screening Level (RSL) table. The associated risk estimates are presented in the detailed Section 4 tables and discussed on pages 4-26 (Uncertainty Analysis) and 4-230 (Summary and Conclusions). The Navy did eliminate manganese as a chemical of concern (COC) (i.e., a chemical to be evaluated in a Feasibility Study) based on the technical discussions presented in these sections. (Edited on Jaunary 13, 2014 to reflect pagination in the current version of the report.)*

RIDEM Comment No. 3: Page ES-3, Bullet 3: Page 4-2, Section 4.1.1: "Risks to human receptors were not evaluated for deep subsurface soil (i.e., soil greater than 10 feet bgs) because human contact with deep subsurface soil is unlikely. No chemicals had significantly greater concentrations in deep subsurface soil than in shallower soil."

"The HHRE evaluated all of the available data for surface (0 to 2 feet bgs or 0 to 3 feet bgs for Study Area 4) and shallow subsurface (greater than 2 feet bgs to 10 feet bgs) soil samples collected from the referenced sites/study areas. Data for deep subsurface soil samples (i.e., those collected from deeper than 10 feet bgs) were not evaluated in the risk characterization step in the HHRE because it is unlikely that human receptors would be exposed to soil greater than 10 feet bgs."

It is unclear in the HHRE at what depth the water table is located and whether soils greater than 10 feet bgs are within the vadose zone. According to the Remediation Regulations, the residential direct exposure criterion shall be applied throughout the vadose zone for each Hazardous Substance in soil. Please delete and/or revise these statements above and anywhere that they occur throughout this report and ensure that soils located greater than 10 ft bgs be evaluated and included in the HHRE if they are above the water table.

Navy Response to Comment No. 3: *Groundwater data at the sites/study areas indicate that the depth to groundwater ranges from approximately 10 to 20 feet bgs. Variability in the depth to the water table occurs for reasons that include the location and time of year.*

It is appropriate to evaluate soil to a depth of 10 feet bgs for human exposures because soil deeper than 10 feet bgs may be saturated. (EPA Region I typically does not assume that receptors are routinely exposed to soils deeper than 10 feet bgs.) Additionally, the HHRE qualitatively evaluated data for soil deeper than 10 feet bgs (i.e., deep subsurface soil) in Section 4.4 (see last bullet), and this qualitative evaluation determined that contaminant concentrations in deep subsurface soil of Sites 02 and 03 do not significantly exceed concentrations in shallow subsurface soil, and no unacceptable risks are expected due to deep subsurface soil exposures at these sites. (It should be noted that soil samples for SA 01 and SA 04 were not collected at depths greater than 10 feet bgs. Also, it is very likely that regrading of the CED area will occur as a consequence of site development. This regrading is likely to result in a more consistent depth-to-groundwater across the CED area.)

The second sentence in Section 4.1.1 will be revised as follows: "Data for deep subsurface soil samples (i.e., those collected from deeper than 10 feet bgs) were not quantitatively evaluated in the risk characterization step in the HHRE because soil deeper than 10 feet bgs may be saturated (the groundwater table within the CED Area ranges from approximately 10 to 20 feet bgs)." Text throughout the report will be revised to indicate that soil greater than 10 feet bgs was not evaluated quantitatively because it likely is deeper than the water table.

RIDEM Follow-up Comment on Navy Response No. 3 – RIDEM accepts that depth to the water table can vary across a site and also seasonally. However, in areas where depth to groundwater is generally 20 feet bgs, it is likely that the unsaturated zone extends deeper than 10 feet bgs. Additionally, Navy's qualitative evaluation summarized in Navy's response to comments implies that some deep subsurface soil concentrations exceed shallow subsurface soil concentrations (i.e., "do not significantly exceed concentrations in shallow subsurface soil"). As a result, RIDEM recommends that Navy identify deep subsurface soil samples in areas where the groundwater table is around 20 feet bgs, quantitatively evaluate these unsaturated deep subsurface soils in the HHRE, and provide a more robust discussion of the deep subsurface soil concentrations that are greater than shallow subsurface soil concentrations.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 3: *Agree. The requested analysis is presented in Attachment 1 and demonstrates that the risks associated with the deeper subsurface soils are within acceptance limits. The attached analysis will be appended to the final version of the risk assessment and discussed in the Uncertainty Analysis.*

RIDEM Comment No. 4: ES-4, Paragraph 2: "Construction workers were evaluated for exposures to total soil, commercial workers were evaluated for exposures to surface soil (0 to 1 foot bgs), and potential residents were evaluated for exposures to surface soil and total soil."

RIDEM's Remediation Regulations require that the industrial/commercial direct exposure criterion be applied to a depth of at least 2 feet bgs. Please revise this statement to reflect RIDEM's Remediation Regulations here and throughout the report.

Navy Response to Comment No. 4: *The sentence in question is referring to the Phase III RI Report, not the current evaluation. For clarity, the sentence will be revised as follows: "However, in the Phase III RI, construction workers and industrial workers were evaluated for exposures to chemicals in soil (construction workers were evaluated for exposure to surface and subsurface soil, but industrial workers were evaluated for exposures to surface soil only)."*

RIDEM Follow-up Comment on Navy Response No. 4 – Response is acceptable.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 4: *No further response is required.*

RIDEM Comment No. 5: Page 4-3, Summary of Surface Soil COPCs Table: "The maximum detected arsenic concentration in soil exceeds the toxicity screening levels, but arsenic concentrations do not exceed background concentrations reported for NCBC Davisville."

Arsenic is ruled out as a COPC based on all arsenic concentrations being less than the RIDEM R-DEC for arsenic. Please refer to Comment No. 1.

Navy Response to Comment No. 5: *Agree. Please see response to Comment No. 1.*

RIDEM Follow-up Comment on Navy Response No. 5 – Response is acceptable.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 5: *No further response is required.*

RIDEM Comment No. 6: Page 4-6, Section 4.1.3 Refinement of Groundwater Protection COPCs, Criterion #2: "The frequency of detections greater than the SSL at a DAF of 20 is less than 5 percent (when at least 20 samples are included in the data set and no contamination "hot spot" is present). Conservatively a "hot spot" is defined as a concentration that exceeds twice the SSL at a DAF of 20."

Under the Remediation Regulations an exceedance of leachability criteria does not get eliminated if detected infrequently. Please delete the entire paragraph and "rationale" in this section and in any other section of the report.

Navy Response to Comment No. 6: *Respectfully disagree. From a technical perspective, the frequency with which a contaminant exceeds a criterion should be taken into account. Considering frequency of detection is typically done in reports prepared under CERCLA, the primary contaminant driver for the sites and study areas are evaluated.*

RIDEM Follow-up Comment on Navy Response No. 6 – It is typical practice under CERCLA and other state remediation programs to use the low frequency of detection rationale if the concentrations of the constituent in question are relatively low, and at least 20 samples are included in the data set and the constituent is not otherwise considered to be site-related (e.g., historically used at the site). We therefore agree with Navy that low frequency of detection may be used as one of the screening tools in selection of COPCs if these conditions are met.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 6: *No further response is required.*

RIDEM Comment No. 7: Page 4-7, Section 4.1.3, Refinement of Groundwater Protection COPCs, Criterion #4: Please refer to Comment No. 1.

Navy Comment to Response No. 7: *Please see responses to Comments No. 1 and No. 2. Additionally, a round of groundwater monitoring for metals is planned for selected shallow wells to aid in resolving any soil to groundwater migration issues for the sites/study areas evaluated.*

RIDEM Follow-up Comment on Navy Response No. 7 – Response is acceptable.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 7: *No further response is required.*

RIDEM Comment No. 8: Page 4-7, Section 4.1.3, Refinement of Groundwater Protection COPCs, Criterion #5 and #6: "Subsurface soil data do not show exceedances of migration to groundwater criteria."

"COPCs are not detected in the shallow groundwater at concentrations clearly exceeding background and SDWA MCLs (or EPA RSLs for tap water, if MCLs are not available)."

Please be advised that these criteria may potentially be under-conservative for Site 02, which is currently paved. Should the pavement be removed, the soil leaching potential may increase. Please refer to Comments Nos. 1, 2, and 3 mentioned above.

Navy Response to Comment No. 8: *Agree, the following sentences will be added at the end of the text in Sections 4.1.3.1 and 4.1.3.3 as part of the Site 02 discussion: "Subsurface soil and groundwater data were used to aid in the evaluation of migration from soil to groundwater under current conditions. However, Site 02 was previously paved and that pavement likely decreased leaching potential. It should also be noted that the entire CED area will likely be re-paved (as part of site re-development) and used for automobile storage."*

RIDEM Follow-up Comment on Navy Response No. 8 – The response is generally acceptable. However, it is noted that Navy's response implies that Site 02 is no longer paved (contrary to previous statements in the report). Therefore, if Navy used soil and groundwater data collected prior to pavement removal for selection of global groundwater COPCs using Criterion #5 and #6, this comparison is no longer valid and should be revisited. It is unclear as to whether Navy plans to re-evaluate the selection of global groundwater COPCs for Site 02 based on this new information.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 8: *As the response is generally considered acceptable and because it is anticipated that the Site 02 will be re-paved in the future, no further re-evaluation of selection of global groundwater COPCs for Site 02 is planned. More importantly, please see Navy response to original RIDEM Comment No. 7. This issue is probably best addressed by groundwater sampling described in this response. The report narrative will be updated to reflect this recommendation.*

RIDEM Comment No. 9: Page 4-20, Section 4.3: "All carcinogenic risk estimates for exposure to surface and subsurface soil are less than or within EPA's target risk range of 1E-04 to 1E-06, and cancer risk estimates for construction workers, industrial workers and recreational users do not exceed the State of Rhode Island cumulative cancer risk limit of 1E-05."

In accordance to the Remediation Regulations the remedial goal for each carcinogenic substance may not exceed a 1E-06 excess lifetime cancer risk level. Please include this information and

specify when risk for individual COPCs exceeds the RIDEM individual cancer risk limit in this section and throughout the document.

Navy Response to Comment No. 9: *Section 4.3 does not discuss remedial goals; therefore, the requirements for remedial goals from the Remediation Regulations will not be discussed. Please note that risk estimates for each of the individual COPCs evaluated in surface and subsurface soil are already presented in Tables 4-7 through 4-38 for each of the sites/study areas and receptors evaluated. (Edited January 13, 2014 to reflect table numbers in the current version of the report.)*

RIDEM Follow-up Comment on Navy Response No. 9 – Response is acceptable.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 9: *No further response is required.*

RIDEM Comment No. 10: Page 4-20, Section 4.3, Risks from Lead: "Lead was selected as a COPC for surface and subsurface soil. The maximum and arithmetic mean lead concentrations for surface soils are listed below."

Please revise by using the 95 percent Upper Concentration Limit (UCL) as the EPC for lead in this section and throughout the document. In addition please retain lead for further COC evaluation.

Navy Response to Comment No. 10: *Section 4.2 (4th paragraph) states, "Per EPA guidance, the arithmetic mean concentration was used as the EPC for lead (EPA, July 1994), and 95 percent Upper Confidence Limits (UCLs) on the arithmetic mean were used as the EPCs for other chemicals." To provide more explanation, this sentence will be revised to: "As stated in the guidance manual for the IEUBK model (EPA, July 1994) the arithmetic mean concentration was used as the EPC for lead, and 95 percent Upper Confidence Limits (UCLs) on the arithmetic mean were used as the EPCs for other chemicals." Additionally, the following sentence will be added as the third sentence under the "Risks from Lead" heading in Section 4.3: "Per EPA guidance, the arithmetic mean concentration was used as the EPC for lead (EPA, July 1994)."*

Because the mean concentrations of lead are less than the OSWER direct contact criterion (400 mg/kg), lead will not be retained for further COC evaluation.

RIDEM Follow-up Comment on Navy Response No. 10 – RIDEM recommends using the 95 percent UCL of the mean concentration as the EPC for lead, both for consistency with the approach to development of EPCs for other COPCs and to address variability in concentration across the site. Although we acknowledge that EPA guidance (OSWER 9200.1-78, 2007) states the arithmetic mean should be used for comparison, we note that EPA also recommends in this document that "if a risk assessor seeks to provide a conservative estimate of the average concentration of lead present in yard soil, an upper bound estimate on the mean may be appropriate for that purpose" (p. 1). The 95 percent UCL would therefore be an appropriate EPC, considering the size of the site and variability in soil lead concentrations. Furthermore, the EPA residential lead screening level of 400 mg/kg is derived using a biokinetic model that uses a blood lead reference level of 10 micrograms per deciliter (µg/dL).

Additionally, use of a more conservative EPC for lead is warranted, given recent changes in recommendations on target blood lead levels. Although the current EPA reference value for identifying children with an elevated blood lead level is 10 µg/dL, the EPA acknowledges that there is recent scientific evidence indicating this level is not protective enough. The Office of Superfund Remediation and Technology Innovation (OSRTI) is currently developing a new soil lead policy to address this new information. Additionally, in May 2012, the Centers for Disease Control (CDC) recommended that the reference value be lowered to 5 µg/dL. If this value were to

be adopted by EPA, the screening level of 400 mg/kg (residential screening criteria) used in the HHRE may not be adequately protective of human health. We therefore recommend that Navy use the 95 percent UCL as the lead EPC and/or consider use of the new reference value of 5 µg/dL as the cut-off level in the Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBKwin v1.1 build 11) and Adult Lead Methodology (ALM). At a minimum, Navy should discuss the CDC's recommendations on an appropriate blood lead level as an uncertainty in Section 4.4.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 10: *As suggested, the Navy has further evaluated the lead concentrations in the CED area soils using the 95 percent UCL as the exposure point concentration (EPC) and considering the CDC May 2012 blood reference value (5 µg/dL). The results of the requested analyses are presented in Attachment 2 and summarized below:*

For informational purposes, lead modeling was conducted for industrial workers and construction workers using a slope factor approach developed by the EPA Technical Review Workgroup for Lead (TRW) (USEPA, January 2003, June 2009) [often referred to as the Adult Lead Model (ALM)] and for residents using the Integrated Exposure Uptake Biokinetic (IEUBK) model (EPA, July 1994). The lead modeling incorporated central tendency exposure (CTE) assumptions for ingestion rate and exposure frequency for the ALM. Ingestion rates of 50 milligrams per day (mg/day) and 165 mg/day were used for industrial workers and construction workers, respectively. Exposure frequencies of 219 days per year and 75 days per year were used for industrial workers and construction workers, respectively. In one set of calculations, the arithmetic mean concentration was used as the EPC. For comparison purposes, lead modeling was also performed for the same receptors using the 95 percent UCL on the mean as the EPC. Default values were used for the remaining input parameters for the ALM and IEUBK model.

The established USEPA goal of no more than 5 percent of receptors having a blood-lead concentration of 10 µg/dL was used to determine if lead modeling results exceeded the benchmark for a particular data set. For comparison purposes, lead modeling was also performed for the same receptors based on the CDC May 2012 blood reference value of 5 µg/dL (CDC, June 2012).

The lead modeling results are presented in Tables 2-1, 2-2, and 2-3 of Attachment 2 for industrial workers, construction workers, and residents, respectively. Table 2-4 is a summary of the modeling results and indicates if more than 5 percent of receptors have blood-lead levels exceeding either 10 µg/dL or 5 µg/dL using either the mean concentration or the 95 percent UCL as the EPC. Unacceptable lead risks (i.e., more than 5 percent of receptors having a blood-lead concentration exceeding a benchmark concentration) are only predicted for residents exposed to Site 02 subsurface soil, Site 03 surface soil, and Study Area 04 surface soil when the 95 percent UCL is used as the EPC and the target blood lead benchmark is 5 ug/dL. No unacceptable lead risks were noted for industrial workers or construction workers under any scenario.

The attached analysis will be appended to the final version of the risk assessment and discussed in the Uncertainty Analysis. However, as previously indicated, primary EPA lead model guidance documents do state that the arithmetic mean should be used as the exposure point concentration for lead. While the 95 percent UCL may provide a more conservative estimate of risk and can be used to compensate for limitations in a dataset, risk management decisions are typically made based on risk estimates developed using the arithmetic mean concentration as the exposure point concentration because the EPA lead models were designed to use central tendency values as inputs to the models. Also, while the EPA is currently evaluating need to update the guidance for the risk assessment of lead, the updated guidance is likely to consider a number of factors (e.g., changes in the baseline blood lead levels of receptor populations), not just a potential

change in the acceptable blood lead level. Consequently, while the EPA screening levels for lead may be lowered, the degree to which they may (or may not) be lowered is not known at this time. Finally, the histograms presented in Attachment 2 suggest that the vast majority of lead concentrations detected in the CED area soils are below both EPA and RIDEM screening levels. The available datasets do not suggest widespread residual lead contamination in the CED area soils.

RIDEM Comment No. 11: Page 4-20, Section 4.3 and Appendix C (Hazard Related to Manganese): Manganese is identified as a risk driver for the construction worker in Site 02, although not for the resident. The oral reference dose (RfD) the Navy used to derive the construction worker screening level (0.14 mg/kg/d) is different from that used by EPA to develop the RSL of 0.024 mg/kg/d). EPA recommends that a modifying factor of 3 be applied to the oral RfD when assessing risk from manganese in drinking water or soil. The RfD was also adjusted to account for dietary sources of manganese. This result is a more conservative RfD than that used for the resident RSL. Please use the same RfD for manganese for all receptors.

Additionally, the particulate emission factor (PEF) derived for the construction worker scenario is approximately three orders of magnitude lower than that used in derivation of the default residential RSLs. Because of this, and the relatively low reference concentration (RfD) for manganese, the resulting non-cancer hazard of the construction worker scenario is higher than that derived for the resident, when one would expect the residential hazard to be higher (this also occurs for aluminum). We also note that a PEF of 1k.1E10m³/kg was used for the recreational user scenario, and was cited as the EPA default. However, the EPA default PEF is 1.36E09 m³/kg. Please consistently apply PEFs to assess dust exposure among all receptors.

Navy Response to Comment No. 11: *Manganese was identified as a risk driver for the construction worker in Study Area 04 subsurface soil and Site 02 subsurface soil. The oral RfD of 0.14 mg/kg/day, which is presented for manganese (diet) in the Regional Screening Level Table was used to calculate the screening levels for construction workers and recreational users, while the RSLs for industrial soil and residential soil (that incorporate the RfD of 0.024 mg/kg/day) were used for the evaluation of industrial workers and hypothetical residents, respectively. The report will be revised to use the RfD for manganese (non-diet) for calculating screening levels for the construction worker and recreational user.*

The text in Appendix C.1 states, "Because air emissions resulting from fugitive dust emissions settings will be different than dust emissions generated during construction activities, a separate PEF was used for construction activities. The PEF for construction workers ($1.62 \times 10^{+6}$ m^3/kg) was calculated using the equations presented in the supplemental SSL guidance document (EPA, December 2002)." The following statement will be added: "The PEF for the construction worker is more conservative than the PEF used for other receptors because it is assumed that construction workers are exposed to dusty conditions." Additionally, a correction to the calculation of the construction worker PEF was made; the corrected PEF value ($1.40 \times 10^{+6}$ m^3/kg) will be incorporated into the HHRE.

For recreational users, Appendix C.1 states, "A PEF value of $1.1 \times 10^{+10}$ m^3/kg was obtained from EPA's Soil Screening Internet site located at http://risk.lsd.ornl.gov/calc_start.htm. This is the default value for Hartford, Connecticut, which is the closest city to Former NCBC Davisville listed on the Internet site." The EPA default PEF of $1.36 \times 10^{+9}$ m^3/kg, used to calculate the RSLs for the hypothetical resident or typical industrial worker, is more conservative than the PEF of $1.1 \times 10^{+10}$ m^3/kg (for the recreational user), which considers the site location. However, the inhalation pathway is not the dominant exposure pathway driving risk-based concentrations for the recreational user (risk-based concentrations for the inhalation pathway are significantly greater

than those calculated for ingestion and/or dermal contact pathways) for the COPCs in this project (and in most projects). Therefore, although a more conservative PEF was incorporated into the risk-based concentrations (i.e., RSLs) used for industrial workers and residents, the overall risk assessment conclusions are not impacted by the use of less conservative (but, site specific) PEF value for the recreational user. No changes would be made to risk assessment conclusions on this basis. (Edited on January 13, 2014 to reflect results in the current version of the report.)

RIDEM Follow-up Comment on Navy Response No. 11 – Response is acceptable.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 11: *No further response is required.*

RIDEM Comment No. 12: Page 4-26, Section 4.5, Site Specific RSL Development Tables: The Navy should document the source of each of the toxicity values used in the HHRE in accordance with EPA risk assessment guidance.

Navy Response to Comment No. 12: *Agree, tables displaying the sources of the toxicity values used in the HHRE will be added to Appendix C.1.*

RIDEM Follow-up Comment on Navy Response No. 12 – Response is acceptable.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 12: *No further response is required.*

RIDEM Comment No. 13: Table 4-11, Construction Worker, Subsurface Soil, Site 02: Please refer to Comment No. 11.

Navy Response to Comment No. 13: *Please see response to Comment No. 11.*

RIDEM Follow-up Comment on Navy Response No. 13 – Response is acceptable.

Navy Response to RIDEM Follow-up Comment on Original Navy Response No. 13: *No further response is required.*

The referenced Attachments 1 and 2 are included on the enclosed CD.